

# Atelier B Professional Edition 24.04

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## 1 Added functionalities

1. New project check action available for projects. This action verifies several safety-related and non-safety related architectural rules for software projects.
2. Automatic proof-support with Alt-Ergo, CVC4, CVC5 and Z3, based on an encoding of proof obligations in SMT format (ppTransSMT).
3. In the project creation wizard, the advanced settings let the user set the Patch-Prover file to be a symbolic link.
4. Fast proof mode is now available in the GUI.
5. Tools bcomp and bxml options to handle
  - one-letter identifiers :
    - Kernel\_joker\_is\_an\_error
    - Kernel\_joker\_is\_a\_warning
  - implementation substitutions in machines and refinements :
    - Allow\_WHILE\_sub\_everywhere
    - Allow\_SEQUENTIAL\_sub\_in\_machine
    - Allow\_VAR\_sub\_in\_machine
  - additional relational operators  $\ll\rightarrow$ ,  $\langle\rightarrow\rangle$  and  $\ll\rightarrow\rangle$  :
    - Allow\_total\_and\_surjective\_relation\_operators

Note that only those two tools support these extensions to the B language.

1. Automatic proof-support with iProver and Vampire, based on an encoding of proof obligations in TPTP format (ppTransTPTP). **experimental**

Open-sourced at <https://github.com/CLEARSY/pptranspog>.

1. Added Rust translator for software projects. **experimental**

Open-sourced at <https://github.com/CLEARSY/b2rust>.

## 2 Documentation

1. Documentation reorganized in Help menu.

## 3 Miscellaneous changes

1. Reorganized installation layout.
2. New POG : Reversed order of operands in the implicit gluing invariant induced by refinement by homonymy.

Improves compatibility with legacy proof obligation generation.

1. New POG : Added attributes to IBXML format to improve traceability to source code.

2. New POG : Normalization of abstract set hypotheses. Hypotheses  $ENS \neq \{\}$  are no longer issued, in favour of  $\text{not}(ENS = \{\})$ .

Improves compatibility with legacy proof obligation generation.

1. In the UserPass creation dialog, when the focus is on the Finish button, typing the Enter key now results in finishing the dialog.
2. Resource `ATB*PR*Enable_WD_Command` is reestablished.
3. Unnecessary calls to arithmetic solver in OPR tool have been removed.

## 4 Bug fixes

1. Edition is no longer disabled on opening multiple-file selection
2. Opening a locked project no longer crashes the GUI.
3. In the interactive prover, it is possible to set up SMT solvers path with spaces.
4. Improved communication robustness between GUI and bbatch core functionalities.
5. Improved stability on Windows platform.
6. `ATB*PR*BRPR_Path` in project configuration is honored
7. Typos in Event-B manual fixed (reported by M. Benveniste).
8. Improved robustness of proof mechanisms when a driver crashes.
9. New POG : fixed translation from POG to PO for the enumerations.
10. Fixed error reporting when generating code already generated.
11. BXML generation for n-ary substitutions.
12. Normalization of ASSERT in type checker.

## 5 Deprecated

1. Old Atelier B user manual was obsolete and is no longer distributed.
2. Translations have been dropped out.